

## ABSTRACT

The present invention relates to the discovery and characterization of activity of Fbp1, a substrate-targeting ubiquitin ligase subunit. The invention encompasses interactions between Fbp1 and its substrates, including Fbp5,  $\beta$ -Catenin, and  $I\kappa B\alpha$ . The 5 invention also encompasses interactions between the Fbp1 isoform  $\beta$ -Trcp2 and its substrates, including Fbp5,  $\beta$ -Catenin, and  $I\kappa B\alpha$ . The present invention relates to screening assays that use Fbp1 and/or  $\beta$ -Trcp2 to identify potential therapeutic agents such as small molecules, compounds or derivatives which modulate Fbp1 and/or  $\beta$ -Trcp2 activity for the treatment of proliferative and differentiative disorders, including infertility, cancer, major 10 opportunistic infections, immune disorders, certain cardiovascular diseases, and inflammatory disorders. The invention also encompasses methods to diagnose and treat Fbp1-related infertility disorders. The invention further encompasses therapeutic protocols and pharmaceutical compositions designed to target Fbp1 and its substrates for the treatment of infertility.